

**County of Orange  
Health Care Agency**

**Orange County Fetal Deaths  
1980-1999**



**September 2002**

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To our colleagues in public health,

We are pleased to announce the availability of our statistical report, "Fetal Deaths, Orange County, 1980-1999." This information is compiled from fetal death certificates filed with the Birth and Death Registration Office of the County of Orange Health Care Agency and is released to analyze trends in fetal deaths for the County.

The information presented in this report can be considered to be the official data for 1980 through 1999. Unless otherwise noted, reference is made to fetal deaths *to Orange County residents*. Similarly, deaths occurring within Orange County, but to residents of other jurisdictions, are *not* included in this report.

The report is available and can be downloaded from the Epidemiology and Assessment website, <http://www.ochealthinfo.com/epi/statistics.htm>.

Thank you for your interest in this special report. We encourage you to make other interested colleagues aware of its publication. If you would like more information, please feel free to contact Epidemiology and Assessment at (714) 834-8180.

Sincerely,

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Mark B. Horton, MD, MSPH  
Deputy Agency Director/Health Officer  
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Juliette A. Poulson, RN, MN  
Agency Director

**County of Orange  
Health Care Agency**

**Orange County Fetal Deaths, 1980 – 1999**

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# Orange County Fetal Deaths, 1980-1999

## Introduction

In Orange County, a historical series of reports containing tabulation of vital statistics have been published relating to births and deaths among Orange County residents. These birth and death reports are vital in determining the health status of the County, to monitor trends in mortality and birth outcomes, and to evaluate Orange County's progress in attaining Healthy People 2000 and 2010 goals. To add to our knowledge of Orange County's health, this report, analyzing fetal deaths, was initiated.

This report summarizes data collected from fetal death records registered by the Orange County Health Care Agency's office of Birth and Death Registration for the time periods of 1980 through 1999. For this report, Orange County adopted the World Health Organization (WHO) definition of a fetal death. This standard was recommended in the 1950's and was instituted to end confusion between the use of terms such as miscarriage, spontaneous abortion, and stillbirth and has remained the same since that time: <sup>1</sup>

“Death prior to the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy; the death is indicated by the fact that after such separation, the fetus does not breathe or show any other evidence of life such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles.” <sup>2</sup>

To remain consistent with reports published by the National Center for Health Statistics (NCHS) and comply with California regulations, only fetal deaths 20 or more weeks of gestation are analyzed in this report. Information on abortions and other medically induced terminations of pregnancy are not included in this report.

## Orange County Fetal Death Rates

Fetal death rates are expressed as the number of fetal deaths per 1,000 total live births and fetal deaths. The rate of fetal deaths between 1980 and 1999 are presented in Table 1 and Figure 1. Reported fetal death rates for Orange County have decreased 36.4% from a peak of 7.4 per 1,000 in 1982 to a low of 4.7 deaths per 1,000 in 1998. During the full time period analyzed, Orange County consistently had a lower fetal death rate than the state of California <sup>3</sup> or the United States as a whole.<sup>4</sup>

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<sup>1</sup> Hoyert DL. *Fetal Mortality by Maternal Education and Prenatal Care, 1990*. National Center for Health Statistics. Vital Health Stat 20(30). 1996.

<sup>2</sup> National Office of Vital Statistic. *International Recommendations on Definitions of Live Births and Fetal Deaths*. Washington D.C.: Public Health Service. 1950.

<sup>3</sup> Center for Health Statistics. *Vital Statistics of California, 1980-1999 Editions*. State of California. Sacramento, California, 1982-2001.

<sup>4</sup> *Vital Statistics of the United States vol II, mortality part A*. Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System for 1980-1993 data. For 1994-1999, data are available on the NCHS website at [www.cdc.gov/nchs/dataawh/statab/unpub/mortabs.htm](http://www.cdc.gov/nchs/dataawh/statab/unpub/mortabs.htm).

**Table 1.** Number of Fetal Deaths and Death Rates, Orange County, California, and the United States, 1980-1999.

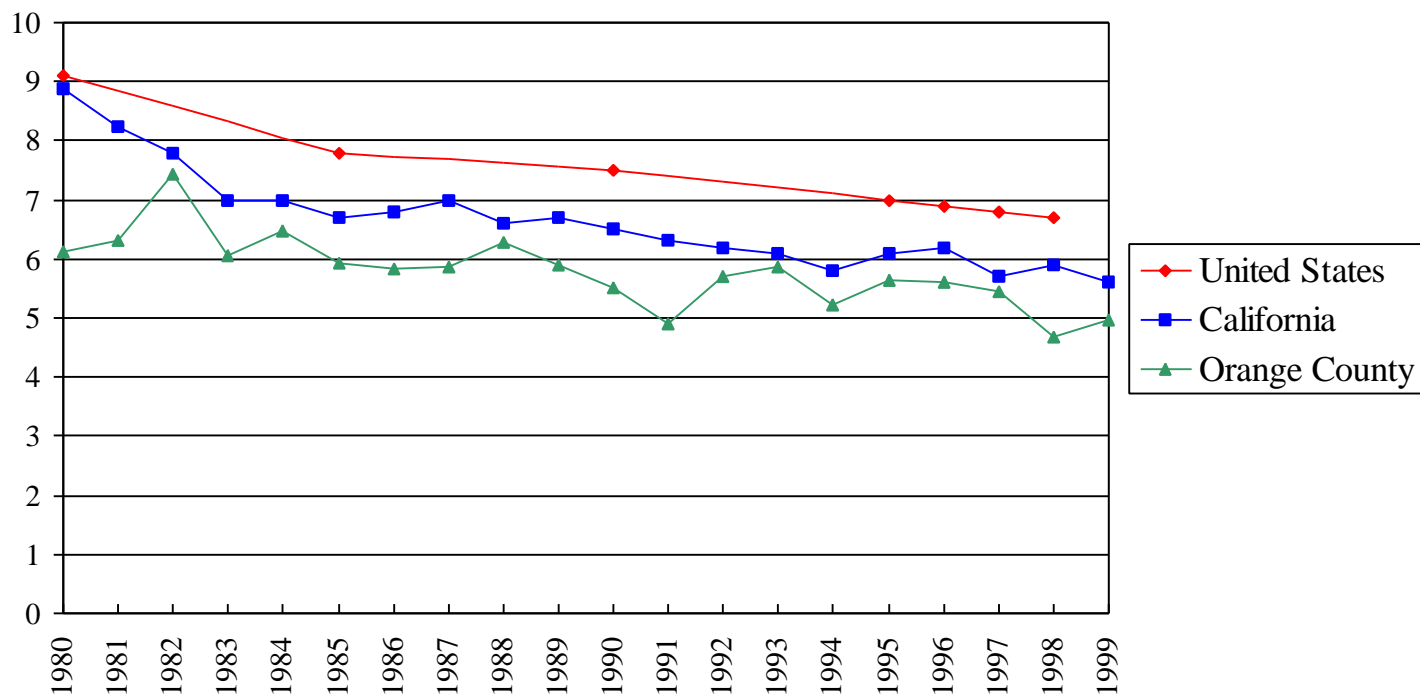
	Orange County		California <sup>1</sup>		United States <sup>2</sup>
Year	Fetal Deaths	Rate <sup>3</sup>	Fetal Deaths	Rate <sup>3</sup>	Rate <sup>3</sup>
1980	194	6.1	3,594	8.9	9.1
1981	210	6.3	3,481	8.2	--
1982	254	7.4	3,333	7.8	--
1983	207	6.1	3,049	7.0	--
1984	223	6.5	3,110	7.0	--
1985	219	5.9	3,171	6.7	7.8
1986	220	5.8	3,259	6.8	--
1987	229	5.9	3,504	7.0	--
1988	266	6.3	3,527	6.6	--
1989	273	5.9	3,824	6.7	--
1990	283	5.5	3,989	6.5	7.5
1991	253	4.9	3,834	6.3	--
1992	297	5.7	3,702	6.2	--
1993	302	5.9	3,574	6.1	--
1994	261	5.2	3,299	5.8	--
1995	274	5.6	3,355	6.1	7.0
1996	270	5.6	3,330	6.2	6.9
1997	258	5.4	2,996	5.7	6.8
1998	217	4.7	3,053	5.9	6.7
1999	232	5.0	2,927	5.6	--

<sup>1</sup> California rates for 1980 and 1981 are calculated from published statistics.

<sup>2</sup> United States data unavailable for 1981-1984, 1986-1989, 1991-1994 and 1999.

<sup>3</sup> Rates are per 1,000 live births and fetal deaths for Orange County, California and the United States.

**Figure 1. Fetal Death Rates <sup>1</sup> for Orange County, California <sup>2</sup> , and the United States <sup>3</sup> , 1980-1999**



<sup>1</sup> Rates are per 1,000 live births and fetal deaths for Orange County, California, and the United States.

<sup>2</sup> California rates for 1980 and 1981 calculated from published statistics

<sup>3</sup> United States data unavailable for 1981-1984, 1986-1989, 1991-1994 and 1999.

## Gender of Fetal Death

For the time period 1980 to 1999, male fetal deaths accounted for slightly more than half (51.8%) of all Orange County fetal deaths with known gender (Table 2). Female fetal deaths in Orange County outnumbered male fetal deaths in four years: 1980, 1984, 1985, and 1992. During the time period 1980-1992, the percentage of male fetal deaths for the State of California was similar to Orange County, 52.1% versus 51.8%. Published data for the State of California between 1993 and 1999 does not include gender.

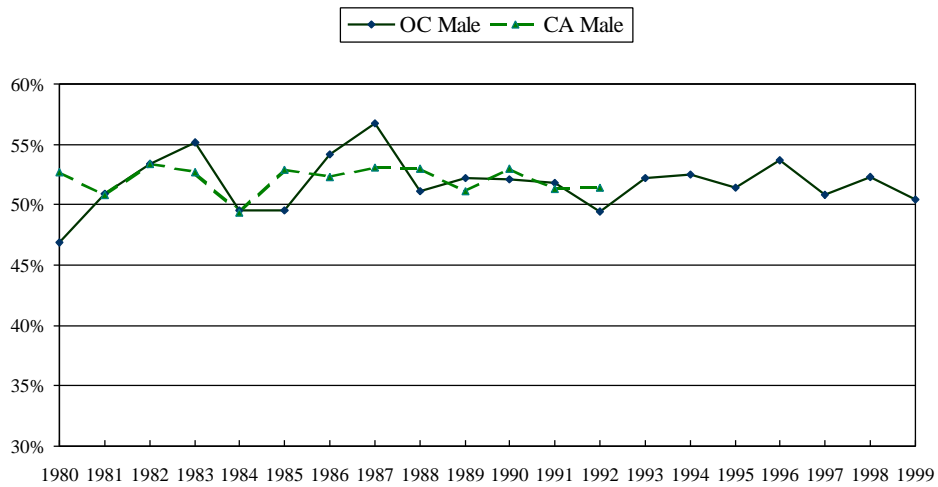
**Table 2.** Number and Percent of Orange County Fetal Deaths with a Known Gender, 1980-1999, and Percent of California Fetal Deaths by Gender, 1980-1992.

Year	Orange County			California <sup>1</sup>	
	Male	Female	Unknown	Male	Female
	N (%)	N (%)	N	%	%
1980	90 (46.9%)	102 (53.1%)	2	52.7%	47.3%
1981	106 (51.0%)	102 (49.0%)	2	50.8%	49.2%
1982	134 (53.4%)	117 (46.6%)	3	53.4%	46.6%
1983	112 (55.2%)	91 (44.8%)	4	52.7%	47.3%
1984	108 (49.5%)	110 (50.5%)	5	49.4%	50.6%
1985	107 (49.5%)	109 (50.5%)	3	52.9%	47.1%
1986	118 (54.1%)	100 (45.9%)	2	52.3%	47.7%
1987	130 (56.8%)	99 (43.2%)	0	53.1%	46.9%
1988	135 (51.1%)	129 (48.9%)	2	53.0%	47.0%
1989	142 (52.2%)	130 (47.8%)	1	51.1%	48.9%
1990	147 (52.1%)	135 (47.9%)	1	53.0%	47.0%
1991	131 (51.8%)	122 (48.2%)	0	51.3%	48.7%
1992	147 (49.5%)	150 (50.5%)	0	51.4%	48.6%
1993	157 (52.2%)	144 (47.8%)	1	--	--
1994	136 (52.5%)	123 (47.5%)	2	--	--
1995	141 (51.5%)	133 (48.5%)	0	--	--
1996	144 (53.7%)	124 (46.3%)	2	--	--
1997	131 (50.8%)	127 (49.2%)	0	--	--
1998	113 (52.3%)	103 (47.7%)	1	--	--
1999	117 (50.4%)	115 (49.6%)	0	--	--

<sup>1</sup> Published California fetal death data for 1993 – 1999 does not contain information pertaining to fetus' gender.

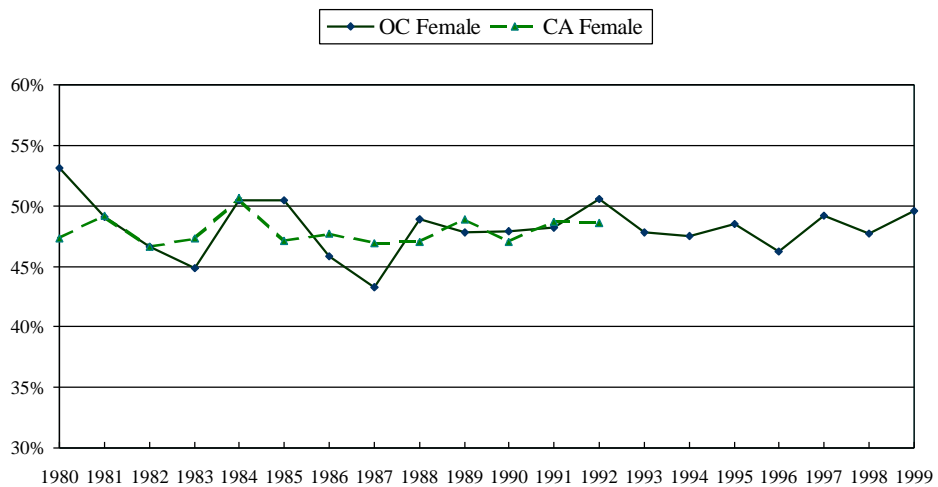


**Figure 2. Percent of Male Fetal Deaths for Orange County, 1980-1999, and Percent of Male Fetal Deaths for California <sup>1</sup>, 1980-1992.**



<sup>1</sup> Published California fetal death data for 1993-1999 does not contain information pertaining to fetus' gender.

**Figure 3. Percent of Female Fetal Deaths for Orange County, 1980-1999, and Percent of Female Fetal Deaths for California <sup>1</sup>, 1980-1992.**



<sup>1</sup> Published California fetal death data for 1993-1999 does not contain information pertaining to fetus' gender.

## Gestational Age of Fetal Death

During the time period 1980 to 1999, gestational age was known for 91.2% of Orange County fetal deaths. The largest proportion of fetal deaths with known fetal age were 20–27 weeks old (36.5%), followed by fetuses 28-36 weeks old (32.5%) and fetuses 37-42 weeks old (28.7%) (Table 3). Only a small number (2.2%) of fetal deaths occurred among fetuses over 42 weeks of age. During the time period analyzed, the percent of fetal deaths increased among fetuses with a gestational age 20-27 weeks from less than a quarter (21.0%) of all fetal deaths in 1980 to over half (51.1%) of all fetal deaths in 1999.

**Table 3.** Number and Percent <sup>1</sup> of Fetal Deaths by Gestational Age in Weeks, Orange County, 1980-1999.

Year	Gestational Age of Fetus in Weeks				Total N	Unk/NS <sup>2</sup> N
	20-27 Weeks N (%)	28-36 Weeks N (%)	37-42 Weeks N (%)	≥ 43 Weeks N (%)		
1980	35 (21.0%)	69 (41.3%)	59 (35.3%)	4 (2.4%)	167	27
1981	48 (27.1%)	56 (31.6%)	65 (36.7%)	8 (4.5%)	177	33
1982	64 (30.8%)	63 (30.3%)	76 (36.5%)	5 (2.4%)	208	46
1983	54 (30.5%)	63 (35.6%)	55 (31.1%)	5 (2.8%)	177	30
1984	60 (33.1%)	58 (32.0%)	56 (30.9%)	7 (3.9%)	181	42
1985	57 (29.7%)	67 (34.9%)	59 (30.7%)	9 (4.7%)	192	27
1986	50 (26.9%)	67 (36.0%)	66 (35.5%)	3 (1.6%)	186	34
1987	71 (36.6%)	64 (33.0%)	53 (27.3%)	6 (3.1%)	194	35
1988	78 (32.4%)	73 (30.3%)	86 (35.7%)	4 (1.7%)	241	25
1989	89 (36.2%)	80 (32.5%)	70 (28.5%)	7 (2.8%)	246	27
1990	89 (34.2%)	94 (36.2%)	72 (27.7%)	5 (1.9%)	260	23
1991	69 (29.0%)	83 (34.9%)	82 (34.5%)	4 (1.7%)	238	15
1992	117 (41.2%)	85 (29.9%)	75 (26.4%)	7 (2.5%)	284	13
1993	112 (39.7%)	87 (30.9%)	77 (27.3%)	6 (2.1%)	282	20
1994	99 (39.8%)	84 (33.7%)	65 (26.1%)	1 (0.4%)	249	12
1995	111 (43.4%)	75 (29.3%)	67 (26.2%)	3 (1.2%)	256	18
1996	115 (45.6%)	76 (30.2%)	58 (23.0%)	3 (1.2%)	252	18
1997	114 (48.1%)	65 (27.4%)	53 (22.4%)	5 (2.1%)	237	21
1998	80 (38.1%)	77 (36.7%)	49 (23.3%)	4 (1.9%)	210	7
1999	114 (51.1%)	64 (28.7%)	41 (18.4%)	4 (1.8%)	223	9
<b>Total</b>	1,626 (36.5%)	1,450 (32.5%)	1,284 (28.8%)	100 (2.2%)	4,460	482

<sup>1</sup> Percentages are calculated using totals that exclude the Unknown/Not Stated group.

<sup>2</sup> Unknown/Not Stated group also contains cases that were reported with a gestation age greater than 52 weeks. This category was retained in the analysis to remain consistent with California Department of Health Services (DHS) methodology because DHS considers gestation ages greater than 52 weeks reflect inaccuracies in reporting and not true gestational ages.

## Mother's Age

For the time period 1980-1999, mother's age at the time of fetal death ranged from 13 years to 50 years. During this time period, the maternal age group that suffered the greatest number of fetal deaths was 25-29 years of age (27.9%) followed by mothers 20-24 years of age (23.0%) and mothers 30-34 years of age (22.7%). Please see Table 4.

**Table 4.** Age Group of Mother by Year, Fetal Deaths, Orange County, 1980 – 1999, and Age Group of Mothers, Live Births 1999.

Year	Mother's Age Group, Fetal Deaths						
	< 18 yrs	18-19 yrs	20-24 yrs	25-29 yrs	30-34 yrs	35-39 yrs	40-50 yrs
1980	2.1%	10.3%	25.3%	27.8%	20.6%	11.3%	2.6%
1981	3.9%	6.3%	27.1%	34.8%	19.8%	5.8%	2.4%
1982	4.4%	8.4%	33.2%	25.2%	19.2%	9.2%	0.4%
1983	2.5%	9.4%	28.7%	30.7%	17.3%	9.4%	2.0%
1984	4.7%	9.3%	26.6%	25.2%	19.6%	12.6%	1.9%
1985	4.1%	6.4%	26.6%	28.4%	25.2%	5.5%	3.7%
1986	3.2%	5.1%	26.9%	30.1%	22.2%	11.6%	0.9%
1987	3.6%	4.9%	23.2%	30.4%	23.7%	12.1%	2.2%
1988	3.1%	3.9%	23.9%	32.0%	20.5%	13.9%	2.7%
1989	4.0%	6.3%	23.3%	28.9%	22.1%	13.0%	2.4%
1990	2.9%	5.1%	26.9%	28.0%	22.9%	10.5%	3.6%
1991	3.6%	7.2%	27.2%	27.2%	21.6%	10.0%	3.2%
1992	3.1%	7.6%	19.2%	32.3%	20.6%	13.4%	3.8%
1993	3.3%	4.3%	24.7%	26.8%	24.1%	13.7%	3.0%
1994	4.2%	8.5%	17.0%	25.5%	26.3%	15.8%	2.7%
1995	5.9%	5.9%	15.9%	23.0%	28.1%	17.4%	3.7%
1996	3.0%	4.1%	18.3%	24.3%	26.1%	17.5%	6.7%
1997	3.1%	6.7%	20.9%	26.0%	24.4%	13.4%	5.5%
1998	3.7%	4.7%	14.4%	27.0%	24.2%	20.9%	5.1%
1999	4.3%	5.7%	13.0%	27.0%	22.2%	21.7%	6.1%
Total	3.7%	6.4%	23.0%	27.9%	22.7%	13.1%	3.3%

Year	Mother's Age Group, Live Births						
	< 18 yrs	18-19 yrs	20-24 yrs	25-29 yrs	30-34 yrs	35-39 yrs	40-50 yrs
1999	2.8%	5.2%	19.4%	28.0%	27.7%	14.0%	2.9%

Due to rounding, percentages may not add to 100.

## Prenatal Care

Over the 20 year period studied, prenatal care was initiated in the first trimester for over 71% of pregnancies that resulted in fetal deaths (Table 5). This percent increased from 67.7% in 1980 to 79.4% in 1999, an increase of 17.3%. The percentage of mothers who reported no prenatal care ranged from a high of 14.1% in 1991 to a low of 2.8% in both 1997 and 1998. The trimester that prenatal care was initiated is useful in determining if any prenatal care was obtained by the mother and in what month the visit took place. However, the trimester that prenatal care was initiated cannot indicate the number of prenatal care visits the mother attended prior to the fetal death, the quality of the prenatal care, or if the prenatal care was obtained as part of routine medical care or because the mother was having problems with the pregnancy.

**Table 5.** Trimester Prenatal Care Initiated, Fetal Deaths, Orange County, 1980-1999, and Trimester Prenatal Care Initiated, Live Births, 1999.

Year	Trimester Prenatal Care Initiated, Fetal Deaths					
	First Trimester	Second Trimester	Third Trimester	No Prenatal Care	Total	Unknown / Not stated
	N (%)	N (%)	N (%)	N (%)	N	N
1980	111 (67.7%)	39 (23.8%)	7 (4.3%)	7 (4.3%)	164	30
1981	136 (70.5%)	38 (19.7%)	9 (4.7%)	10 (5.2%)	193	17
1982	155 (70.1%)	41 (18.6%)	15 (6.8%)	10 (4.5%)	221	33
1983	123 (72.4%)	28 (16.5%)	8 (4.7%)	11 (6.5%)	170	37
1984	135 (70.3%)	40 (20.8%)	6 (3.1%)	11 (5.7%)	192	31
1985	133 (71.1%)	31 (16.6%)	17 (9.1%)	6 (3.2%)	187	32
1986	138 (73.0%)	21 (11.1%)	9 (4.8%)	21 (11.1%)	189	31
1987	145 (72.1%)	30 (14.9%)	8 (4.0%)	18 (9.0%)	201	28
1988	152 (63.1%)	56 (23.2%)	11 (4.6%)	22 (9.1%)	241	25
1989	157 (61.1%)	59 (23.0%)	18 (7.0%)	23 (8.9%)	257	16
1990	161 (59.4%)	70 (25.8%)	16 (5.9%)	24 (8.9%)	271	12
1991	159 (63.9%)	45 (18.1%)	10 (4.0%)	35 (14.1%)	249	4
1992	201 (69.1%)	53 (18.2%)	12 (4.1%)	25 (8.6%)	291	6
1993	223 (75.9%)	45 (15.3%)	10 (3.4%)	16 (5.4%)	294	8
1994	196 (76.6%)	39 (15.2%)	7 (2.7%)	14 (5.5%)	256	5
1995	213 (79.2%)	42 (15.6%)	6 (2.2%)	8 (3.0%)	269	5
1996	192 (73.3%)	50 (19.1%)	9 (3.4%)	11 (4.2%)	262	8
1997	201 (80.7%)	30 (12.0%)	11 (4.4%)	7 (2.8%)	249	9
1998	165 (77.1%)	32 (15.0%)	11 (5.1%)	6 (2.8%)	214	3
1999	181 (79.4%)	34 (14.9%)	2 (0.9%)	11 (4.8%)	228	4
<b>Total</b>	3,277 (71.3%)	823 (17.9%)	202 (4.4%)	296 (6.4%)	4,598	344

Year	Trimester Prenatal Care Initiated, Live Births					
	First Trimester	Second Trimester	Third Trimester	No Prenatal Care	Total	Unknown / Not stated
1999	40,219 (86.9%)	4,918 (10.6%)	960 (2.0%)	169 (0.4%)	46,266	210

Percentages are calculated using totals that exclude the Unknown/Not Stated group. Due to rounding, percentages may not add to 100.

## Weight of the Fetus

Nearly one half (44.7%) of all fetal deaths between 1980-1999 weighed  $\leq 1,000$  grams (Table 6). In 1980, fetal deaths  $\leq 1,000$  grams accounted for only 33.9% of fetal deaths, while almost the same percentage of fetal deaths (31.3%) weighed  $> 2,500$  grams. Between 1980 and 1999, there was an increase of 77.9% in the percentage of fetal deaths that weighed  $\leq 1,000$  grams from 33.9% in 1980 to 60.3% in 1999.

**Table 6.** Number and Percent of Fetal Deaths by Weight (grams), Orange County, 1980-1999 and Number and Percent of Live Births by Weight (grams), 1999.

Year	Weight of the Fetus in Grams					
	$\leq 1,000$	1,001-1,500	1,501-2,000	2,001-2,500	$\geq 2,501$	Unknown / Not Stated
	N (%)	N (%)	N (%)	N (%)	N (%)	N
1980	65 (33.9%)	24 (12.5%)	20 (10.4%)	23 (12.0%)	60 (31.3%)	2
1981	78 (37.5%)	19 (9.1%)	21 (10.1%)	16 (7.7%)	74 (35.6%)	2
1982	87 (34.9%)	22 (8.8%)	34 (13.7%)	33 (13.3%)	73 (29.3%)	5
1983	75 (36.4%)	32 (15.5%)	25 (12.1%)	16 (7.8%)	58 (28.2%)	1
1984	86 (39.8%)	27 (12.5%)	20 (9.3%)	26 (12.0%)	57 (26.4%)	7
1985	83 (38.8%)	20 (9.3%)	25 (11.7%)	23 (10.7%)	63 (29.4%)	5
1986	82 (38.1%)	21 (9.8%)	22 (10.2%)	31 (14.4%)	59 (27.4%)	5
1987	110 (48.7%)	21 (9.3%)	19 (8.4%)	18 (8.0%)	58 (25.7%)	3
1988	105 (39.6%)	20 (7.5%)	33 (12.5%)	23 (8.7%)	84 (31.7%)	1
1989	112 (41.2%)	26 (9.6%)	25 (9.2%)	30 (11.0%)	79 (29.0%)	1
1990	123 (43.6%)	28 (9.9%)	40 (14.2%)	18 (6.4%)	73 (25.9%)	1
1991	95 (37.7%)	41 (16.3%)	25 (9.9%)	24 (9.5%)	67 (26.6%)	1
1992	136 (46.3%)	33 (11.2%)	30 (10.2%)	30 (10.2%)	65 (22.1%)	3
1993	142 (47.2%)	27 (9.0%)	19 (6.3%)	24 (8.0%)	89 (29.6%)	1
1994	132 (50.8%)	24 (9.2%)	18 (6.9%)	29 (11.2%)	57 (21.9%)	1
1995	141 (51.5%)	27 (9.9%)	20 (7.3%)	18 (6.6%)	68 (24.8%)	0
1996	149 (55.6%)	22 (8.2%)	25 (9.3%)	18 (6.7%)	54 (20.1%)	2
1997	149 (58.2%)	28 (10.9%)	15 (5.9%)	14 (5.5%)	50 (19.5%)	2
1998	101 (46.5%)	30 (13.8%)	24 (11.1%)	20 (9.2%)	42 (19.4%)	0
1999	140 (60.3%)	17 (7.3%)	14 (6.0%)	26 (11.2%)	35 (15.1%)	0
<b>Total</b>	2,191 (44.7%)	509 (10.4%)	474 (9.7%)	460 (9.4%)	1,265 (25.8%)	43

Year	Weight of the Infant in Grams, Live Births					Unknown / Not Stated
	$\leq 1,000$	1,001-1,500	1,501-2,000	2,001-2,500	$\geq 2,501$	
1999	235 (0.5%)	270 (0.5%)	570 (1.1%)	1,777 (3.4%)	48,863 (94.5%)	0

Percentages are calculated using totals that exclude the Unknown/Not Stated group. Due to rounding, percentages may not add to 100.

## Race/Ethnicity of the Mother

For the time period 1982 <sup>1</sup> to 1999 Non-Hispanic Black mothers had the highest fetal death rate for the entire time period and, when rates could be calculated, had the highest fetal death rate for every year except 1990 and 1992. The rate of fetal deaths for Non-Hispanic White mothers, Hispanic mothers and API mothers decreased 45%, 14% and 27%, respectively, over the study period.

**Table 7.** Race/Ethnicity of the Mother, Fetal Deaths, Orange County, 1982-1999.

Year <sup>1</sup>	Race/Ethnicity of the Mother							
	Non-Hispanic White		Hispanic		Non-Hispanic Black		API <sup>2</sup>	
	N	Rate <sup>3</sup>	N	Rate <sup>3</sup>	N	Rate <sup>3</sup>	N	Rate <sup>3</sup>
<b>1982</b>	174	8.24	59	6.21	2	--	15	5.33
<b>1983</b>	113	5.40	70	7.45	7	12.75	11	3.68
<b>1984</b>	118	5.67	69	7.09	9	14.38	16	5.15
<b>1985</b>	111	5.04	87	8.06	9	13.57	9	2.85
<b>1986</b>	115	5.21	74	6.38	9	13.62	16	4.86
<b>1987</b>	124	5.59	78	6.36	8	11.76	18	4.92
<b>1988</b>	137	5.94	90	6.40	8	11.20	26	5.97
<b>1989</b>	141	6.00	102	5.74	6	7.97	24	5.60
<b>1990</b>	122	5.20	133	6.01	5	5.91	22	4.60
<b>1991</b>	100	4.37	127	5.67	6	7.19	19	3.67
<b>1992</b>	113	5.17	151	6.40	5	5.86	28	5.22
<b>1993</b>	122	5.81	143	6.05	10	11.52	26	4.72
<b>1994</b>	99	4.98	120	5.13	9	12.03	31	5.74
<b>1995</b>	111	6.00	120	5.19	14	17.72	26	4.87
<b>1996</b>	99	5.55	136	5.88	4	--	29	5.42
<b>1997</b>	90	5.17	137	5.97	5	7.24	23	4.17
<b>1998</b>	76	4.19	118	5.26	0	--	22	4.32
<b>1999</b>	80	4.57	123	5.37	5	8.33	22	3.89
<b>Total</b>	2,045	5.47	1,937	5.96	121	9.49	383	4.74

<sup>1</sup> Due to inconsistency in coding of race/ethnicity of data for 1980 and 1981, these years are excluded from analysis.

<sup>2</sup> API Contains all Asians and Pacific Islanders

<sup>3</sup> Rates are fetal deaths rates calculated per 1,000 live births plus fetal deaths.

-- Rates are not calculated for fewer than five fetal deaths.

## Number of Fetuses for Current Pregnancy

The vast majority (92.2%) of fetal deaths between 1980 and 1999 occurred among singleton pregnancies (Table 8). Of the remaining 7.8% fetal deaths, 95.3% occurred among a pregnancy with twins, 4.4% occurred among a pregnancy with triplets, and 0.3% occurred among a pregnancy with quadruplets.

**Table 8.** Number of Fetuses for Current Pregnancy, Fetal Deaths, Orange County, 1980-1999 and number of Fetuses for Current Pregnancy, Live Births, 1999.

Year	Number of Fetuses for Current Pregnancy, Fetal Deaths				
	Singleton		Twin or More		Total
	N	%	N	%	
1980	177	91.2%	17	8.8%	194
1981	195	92.9%	15	7.1%	210
1982	229	90.2%	25	9.8%	254
1983	192	92.8%	15	7.2%	207
1984	211	94.6%	12	5.4%	223
1985	203	92.7%	16	7.3%	219
1986	199	90.5%	21	9.5%	220
1987	209	91.3%	20	8.7%	229
1988	247	92.9%	19	7.1%	266
1989	243	89.0%	30	11.0%	273
1990	258	91.2%	25	8.8%	283
1991	233	92.1%	20	7.9%	253
1992	277	93.3%	20	6.7%	297
1993	280	92.7%	22	7.3%	302
1994	247	94.6%	14	5.4%	261
1995	260	94.9%	14	5.1%	274
1996	244	90.4%	26	9.6%	270
1997	239	92.6%	19	7.4%	258
1998	205	94.5%	12	5.5%	217
1999	208	89.7%	24	10.3%	232
<b>Total</b>	4,556	92.2%	386	7.8%	4,942

Year	Number of Fetuses for Current Pregnancy, Live Births				
	Singleton		Twin or More		
	N	%	N	%	
1999	45,191	97.2%	1,287	2.8%	46,478

Due to rounding, percentages may not add to 100.

## Cause of Fetal Death

In 1980, the leading cause of fetal death in Orange County was *intrauterine hypoxia and birth asphyxia*, the second leading cause of fetal death was *congenital malformations*, and the third leading cause of fetal death was *disorders related to short gestation and low birth weight*. By 1990, *disorders related to short gestation and low birth weight* was the leading cause of fetal death and *intrauterine hypoxia and birth asphyxia* had fallen to the third leading cause of fetal death, while *congenital malformations* remained the second leading cause of fetal death. *Disorders related to short gestation and low birth weight* remained the primary leading cause of fetal death through the end of the study period in 1999.

The cause of fetal death codes used are based on the list of 124 leading causes of fetal death and condensed list of 72 leading causes of fetal death compiled by the National Center for Health Statistics (NCHS). Based on the categories published by the NCHS, a large proportion of the fetal death codes are assigned to the "Other Causes of Death" category. The majority of the *other causes of death* category, varying from approximately 26% of fetal death records in 1996 to 67% of fetal death records in 1987 were filed with the fetal cause of death code blank. Table 9 lists the top five causes of fetal death for 1980 and 1999; Table 10 lists the causes of fetal death and ICD-9 codes for the 72 leading causes of fetal death by year.

**Table 9.** Five Leading Causes of Fetal Death, 1980 and 1999

<b>1980 *</b>			
<b>Rank</b>	<b>Cause of Fetal Death (ICD-9 code)</b>	<b>Number</b>	<b>Percent</b>
1	Hypoxia before labor (768.0)	73	37.6%
2	Congenital malformations (740-750)	18	9.3%
3	Disorders related to short gestation and low birth weight (765)	13	6.7%
4	Syndrome of an infant of a diabetic mother (775.0-775.1)	4	2.1%
5	Fetal hemorrhage (772)	2	1.0%
* 27 (13.9%) deaths were filed without a cause of death in 1980			

<b>1999 *</b>			
<b>Rank</b>	<b>Cause of Fetal Death (ICD-9 code)</b>	<b>Number</b>	<b>Percent</b>
1	Disorders related to short gestation and low birth weight (765)	120	51.7%
2	Congenital malformations (740-750)	30	12.9%
3	Intrauterine hypoxia and birth asphyxia (768)	8	3.4%
4	Fetus affected by complications of placenta, umbilical cord or membranes (762)	7	3.4%
4	Syndrome of an infant of a diabetic mother (775.0-775.1)	7	3.0%
* 26 (11.2%) deaths were filed without a cause of death in 1999			



**Table 10.** Cause of Fetal Death, Orange County, 1980-1999.

Cause of Death (ICD-9 Code)	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Insitu neoplasm, benign neoplasms and neoplasms of uncertain or unknown behavior (210-239)	0	0	0	0	2	1	0	0	0	0
Umbilical hernia (551.1, 552.1, 553.1)	0	0	0	0	0	1	0	0	0	0
Congenital malformations (740-759)	18	19	33	21	25	31	30	38	44	40
Fetus affected by noxious influences transmitted via placenta (760.7, 763.5)	0	0	0	0	0	0	0	0	0	0
Fetus affected by maternal complications unrelated to current pregnancy (760)	0	0	0	0	0	0	0	0	0	0
Fetus affected by maternal complications of pregnancy (761)	0	0	0	0	0	0	0	0	0	0
Fetus affected by complications of placenta, umbilical cord, or membranes (762)	0	9	0	3	0	1	0	0	0	0
Fetus affected by other complications of labor & delivery (763)	0	0	0	0	1	0	0	0	0	0
Fetus affected by slow growth and malnutrition (764)	0	0	0	0	0	0	0	0	1	0
Disorders related to short gestation & low birth weight (765)	13	18	19	20	26	21	29	3	65	73
Disorders related to long gestation and high birth weight (766)	0	1	0	0	1	2	2	0	2	0
Birth trauma (767)	0	0	0	0	0	0	0	0	3	3
Intrauterine hypoxia and birth asphyxia (768)	73	69	69	54	45	45	35	6	49	52
Congenital pneumonia (770.0)	0	0	0	0	0	0	0	0	0	0
Aspiration syndromes (770.1)	1	0	0	0	0	0	0	1	4	1
Atelectasis (770.4-770.5)	0	2	0	0	0	0	1	0	0	0
Congenital rubella syndrome (771.0)	0	0	0	0	0	0	0	0	0	0
Congenital cytomegalovirus infection (771.1)	0	0	0	0	0	0	0	0	0	0
Other congenital infections (771.2)	0	0	0	0	0	0	0	0	0	0
Fetal hemorrhage (772)	2	0	1	0	2	2	0	1	5	7
Hemolytic disease of the fetus (773)	0	2	1	3	1	1	1	1	1	0
Perinatal jaundice (774)	0	0	0	0	0	0	1	0	0	0
Syndrome of an infant of a diabetic mother (775.0-775.1)	4	1	2	4	1	2	1	2	1	2
Hematological disorders (776)	1	0	0	0	0	0	0	0	0	0
Hydrops fetalis not due to hematologic disorders (778.0)	0	1	2	3	5	2	2	3	1	1
Other causes of death	55	63	89	68	67	70	60	57	59	55
Cause of death code missing	27	25	38	31	47	40	58	117	31	39
Total	194	210	254	207	223	219	220	229	266	273

(continued)

<sup>1</sup> Based on the National Center for Health Statistics List of 124 Leading Causes of Fetal Death.

**Table 10.** (continued)

Cause of Death (ICD-9 Code)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Insitu neoplasm, benign neoplasms and neoplasms of uncertain or unknown behavior (210-239)	0	0	0	0	0	0	0	0	0	0
Umbilical hernia (551.1, 552.1, 553.1)	0	0	0	0	0	0	0	0	0	0
Congenital malformations (740-759)	51	46	49	37	59	49	46	49	36	30
Fetus affected by noxious influences transmitted via placenta (760.7, 763.5)	1	0	0	0	0	0	0	0	0	0
Fetus affected by maternal complications unrelated to current pregnancy (760)	0	0	0	0	0	0	0	0	0	1
Fetus affected by maternal complications of pregnancy (761)	0	0	0	0	0	0	1	0	0	0
Fetus affected by complications of placenta, umbilical cord, or membranes (762)	1	0	0	1	0	0	0	0	0	7
Fetus affected by other complications of labor & delivery (763)	0	0	0	0	0	0	0	0	0	0
Fetus affected by slow growth and malnutrition (764)	0	0	1	0	0	0	0	0	0	1
Disorders related to short gestation & low birth weight (765)	100	90	90	97	66	85	91	89	83	120
Disorders related to long gestation and high birth weight (766)	0	0	2	0	0	0	0	0	0	1
Birth trauma (767)	3	0	0	0	0	1	0	0	1	0
Intrauterine hypoxia and birth asphyxia (768)	38	24	38	38	30	36	27	24	22	8
Congenital pneumonia (770.0)	0	0	0	0	0	0	1	0	0	0
Aspiration syndromes (770.1)	0	0	1	0	0	0	1	0	0	0
Atelectasis (770.4-770.5)	0	0	0	1	0	0	0	0	0	0
Congenital rubella syndrome (771.0)	0	0	0	0	1	0	0	0	0	0
Congenital cytomegalovirus infection (771.1)	0	0	0	0	0	1	0	0	0	0
Other congenital infections (771.2)	0	0	0	0	1	0	0	1	0	1
Fetal hemorrhage (772)	0	0	0	2	0	0	1	0	0	1
Hemolytic disease of the fetus (773)	2	3	0	0	1	0	0	0	0	1
Perinatal jaundice (774)	0	0	0	0	0	0	0	0	0	0
Syndrome of an infant of a diabetic mother (775.0-775.1)	6	6	3	7	2	5	6	9	6	7
Hematological disorders (776)	0	1	2	0	0	1	1	1	0	0
Hydrops fetalis not due to hematologic disorders (778.0)	4	1	8	3	4	1	2	1	1	4
Other causes of death	43	49	72	71	70	66	69	53	36	24
Cause of death code missing	34	33	31	45	27	29	24	31	32	26
Total	283	253	297	302	261	274	270	258	217	232

<sup>1</sup> Based on the National Center for Health Statistics List of 124 Leading Causes of Fetal Death